ABSTRACT

A wafer cluster tool is described which operates in a regular, periodic fashion. Embodiments of the invention have a periodicity of one sending period. The invention enables the determination of pick-up times for process chambers in the cluster tool, and embodiments of the invention allow the creation and maintenance of an updated timetable. The timetable indicates times when each of the process chambers is to be serviced. These values are updated as the process chambers receive new wafers. Robots in the cluster tool may pre-position themselves in front of modules, or process chambers, to be served. Robot pre-positioning eliminates the wait time of individual modules beyond queue times which have been pre-determined for the modules. This renders the path of the individual robots pre-deterministic, and enables the cluster tool to utilize single gripper robots.